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Date: 25 May 1993

Refer to: DIR

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Honorable Hazel O'Leary
Secretary of Energy
U. S. Department of Energy
P. O. Box 23865
Washington, DC 20026

Dear Mrs. O'Leary:

Based upon our May 19th meeting with you, we have reviewed the purposes and objectives that DOE should endeavor to achieve in a 15 test, Hatfield compliant test schedule. This included re-evaluating the four system development strategy (W88, W80, B61, and W76) that was proposed by DOE at the end of 1992, and revisiting the objectives and justification for each of the additional experiments proposed to accompany the 15 tests.

The four system development strategy was devised in an attempt to provide safety backups for the four highest priority enduring stockpile systems. While, in principle, we still support the notion of including a backup IHE, FRP design for the W76 SLBM, there are overwhelming arguments against such an approach. We believe that it has the highest technical risk; it will require us to remove other higher priority tests from the schedule; test resources would not seem to permit it; and in terms of realpolitik it would likely cause the Defense Department to non-concur in any test program because they have taken a very strong position against any redesign of this warhead.

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We have completed our evaluation of the options that would make up a DOE preferred 15-test, Hatfield compliant test program. The results of our evaluation are at Attachment A. We believe this is a very good program; and that it is also one that the Defense Department would accept.

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We do require additional reliability data for the W80. As the MK5 represents the newest reentry body for the newest missile in the enduring stockpile and therefore a key component of the nation's forces, it is prudent to develop and test both high yield and low yield versions of this warhead while testing is still permitted.

In response to the request to prioritize the US tests on the schedule, we have not attempted to prioritize the six tests devoted to the UK and reliability of the current stockpile, since they clearly represent a distinct set of issues from the safety and development experiments and have been widely supported during development of the test plan.

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We have also revised the additional experiments to ensure that they provide information and data needed in support of the enduring stockpile, support the development tests proposed or transition us to a CTB posture. All are either zero-yield or low-yield experiments that correspond to the DOE guidance for conducting such experiments.

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Sincerely yours,

S. S. Hecker
Director
Los Alamos National Laboratory

J. H. Nuckolls
Director
Lawrence Livermore National
Laboratory

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Attachment A

NUCLEAR TEST SCHEDULE AND PRIORITIES

- The previously negotiated test schedule (available for May 14th Principals Meeting) was determined to be a good framework for the enclosed revised schedule:
- This revised schedule provides for the following:

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- Careful consideration was given to including the W76 enhanced safety design but this option was not included for the following reasons:
 - Technically high risk and most difficult to accomplish within the Hatfield test period.
 - Navy and JCS have rejected this option on several occasions and resurfacing it now with no new arguments could result in DoD non-concurrence in any test program. This would not be in the national interest.

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- Does not support Navy's long-term strategy
- Add-ons that are shown on this schedule fall into three categories:
 - Low yield tests designed to provide additional data needed on deployed warheads prior to a CTB
 - Zero yield experiments for bridging data in preparation for a CTB
 - Low yield and zero yield tests to support the enhanced safety backup designs being developed with this schedule.

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Options for 7 DOE Tests

Option 1

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Option 2

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Option 3

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Option 4

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Option 5

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Option 6

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9 Test Options

Option A

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Option B

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6 Test Option

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The Nine Test Plan

Overview:

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Reliability Tests:

Determining and maintaining stockpile reliability is the primary concern to the military planner, which provides confidence in the efficacy of the stockpile, and hence the U.S. nuclear deterrent.

While there is both technical and programmatic value to testing each of the warheads in the enduring stockpile before entry into a Comprehensive Test Ban (CTB), the law permits only three reliability tests and requires that the President certify such tests are in U.S. national security interest.

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The data from these tests will act to extend our confidence in the performance of these weapons further into the future.

United Kingdom Tests:

We also fully support the requirements for three tests conducted by the UK in support of their nuclear weapon development and safety assurance program.

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The ALCM/ACM Warhead Safety Development Tests:

We believe the stockpile to be safe and secure. This is particularly true if the cruise missile warheads remain in their respective storage bunkers and are not exposed to the hazards of the sustained, intense heat of an aircraft fuel fire associated with an accident, while on alert, fully loaded with fuel.

The present W80 warhead has two of the three enhanced safety features -- ENDS and IHE -- suggested in the Drell report. ENDS (enhanced nuclear detonation safety) provides the positive design features in the electrical system of nuclear weapons to ensure that unintentional nuclear detonation does not occur in normal or abnormal environments. ENDS facilitates predictable weapon response in abnormal environments through the use of multiple independent safety subsystems.

The use of IHE (insensitive high explosive) in nuclear weapons eliminates the risk of inadvertent detonation of the high explosive in nearly all abnormal environments. Thus, IHE precludes the most catastrophic source of plutonium dispersal in most accidents involving nuclear weapons.

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The three safety development tests, therefore, offer the only opportunity to develop a means to prevent the spread of plutonium in the event an ALCM or ACM were subjected to an accidental fire, a risk not shared to the same degree by weapons loaded on ballistic missile systems.

Assuming the three safety development tests were successful, then we would have the ability sometime in the future to retrofit the cruise missile force (ALCM/ACM) with a new, safer warhead if the circumstances justified the change.

It may also prove possible to use these "improved safety" warheads with other weapons systems, in particular the Mk5, should another weapon system's warhead require a retrofit.

Why Resume Testing Now:

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However, the law does not permit conducting

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tests explicitly for the purpose of preparing for a CTB. Therefore, there will be problems in transitioning from our current knowledge, capabilities and data to a future dependent only on computer based design, non-nuclear experiments and zero yield nuclear experiments.

Given that the current test moratorium exists as a result of a series of coincidental world events, it is unlikely that the infrastructure that supports the stockpiles of each of the nuclear nations is fully prepared to enter into a protracted period without testing. This additional limited testing will allow the realignment of this support infrastructure to better ensure the reliability and effectiveness of the enduring stockpile while also positioning ourselves to enter a CTB in 1996.

Therefore if testing is limited for a specified period and with limited objectives -- a view that is shared by the UK, likely by France, and perhaps Russia -- then the other nuclear nations may be more willing and able to accept a CTB, if their scientific advisors are satisfied that their respective stockpiles are prepared for entry into a protracted period without testing to confirm the efficacy of their respective deterrents.

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The Nine Test W80 Candidate Proposal

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Since implementation is the aim of this test program, candidate selection must be done jointly with the Air Force, weighing safety enhancements against reliability, transparency and risk. Three candidates are considered here:

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